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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

DETAILED ACTION

1. This action is responsive to the amendment filed on June 26, 2007.

2. Claims 1-18 and 20 have been examined.

Response to Amendments

3. Per Applicants' request, claims 1, 18, and 20 have been amended.

4. The objection to the specification is withdrawn in view of Applicants' amendments.

Claim Objection

5. Claims 1, 18, and 20 are objected to because of minor informalities. The phrase is considered to read as - -...wherein the alignment identifies and aligns steps that are equivalent [[as]] once generalized ...- - as disclosed in the specification, page 10, lines 17-19 and page 11, lines 11-14.

Response to Arguments

6. The Applicants are thanked for a thorough reply. Applicants' arguments have been fully considered.

    a) Claims 1-12, 15-18, and 20 under 35 USC §102(b) rejection as being anticipated by Bala (Remarks, pp. 9-10):

    After further consideration, the examiner notes that Bala also teaches the newly added limitations.

    In the specification, the Applicants explicitly defined:

> "A procedure executable model is constructed by simultaneous alignment and generalization of a collection of traces constructed as described above. The term "alignment," as used herein, refers to identifying sets of steps that are equivalent once generalized. The term "generalization," as used herein, refers to producing an abstract description that may include one or more ways of explaining (e.g., predicting) the differences between the individual steps belonging to the set. For example, each user from

a group of users would generally type his or her own unique user identification in a "username" field of a log-in dialog. Because each user identification is unique, <u>without generalization it may be inferred that</u> each action of typing in a user identification is separate and distinct. <u>Generalizing</u>, however, <u>infers that</u> the unique strings typed in the "username" field, <u>although different</u>, actually <u>refer to a generic set of steps</u> for typing in a unique user identification" (page 10: 16 – page 11: 5, emphasis added); and

"... As previously stated, <u>aligning refers to identifying steps that are equivalent</u> once generalized. In this example, the steps of <u>inputting a username</u> may be aligned, and the steps of <u>inputting a password</u> may be aligned. <u>However, the steps of logging onto a web site</u> (i.e., the combined steps of inputting a username and password) <u>may not be aligned because they are not equivalent</u>. As described in greater detail below, an iterative method is proposed herein that refines alignment and generalization at each iteration. The iterative method decides whether alignment is appropriate without user input" (page 11: 13-19, emphasis added).

In light of Applicants' disclosure and now claimed, Bala also teaches:

the at least one trace comprises a plurality of steps (e.g., FIG. 4, [0056-0058],

block 410 "User selects task";

block 458 "Are there additional steps to execute?", steps within the selected task have been aligned automatically;

block 464 "Is the system in step by step mode?", steps within the selected task have been aligned automatically);

simultaneously performing an alignment and generalization of the plurality of steps (e.g., FIG. 5E-5F, [0067-0069],

each user from a group of users would generally type his or her desired path in a "path variable" field in "My Computer\Control Panel\System" windows/dialogs;

generalizing, however, infers that the desired path typed in the "path variable" field, although different, actually refer to a generic set of steps for typing in a desired path, i.e., Bala explicitly teaches said steps have been simultaneously aligned and generalized),

wherein the alignment identifies and aligns steps that are equivalent once generalized (e.g., FIG. 5A-5J, [0059-0073],

every step of advancing a window/dialog in the task "Edit the path variable" has the steps of inputting parameters and clicking "Back", "Next", or "OK";

the steps of inputting parameters and clicking "Back", "Next", or "OK" have been aligned, i.e., identifying sets of steps that are equivalent once generalized;

however, the combined steps of inputting parameters and clicking "Back", "Next", or "OK" may not be aligned because they are not equivalent).

Accordingly, the examiner respectfully maintains the 35 USC §102 rejection over claims 1-12, 15-18, and 20.

b) Claims 1, 18, and 20 under 35 USC § 102(b) rejection as being anticipated by Horvitz (Remarks, pp. 10-11):

After further consideration, the examiner establishes a new ground of rejection as set forth in paragraph 11 below.

c) Claims 13 and 14 are also rejected based on virtue of their dependencies on the base claim 1 as set forth in **a)** above.

Claim Rejections – 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-12, 15-18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Bala (art of record, US Patent Publication No. 2004/0130572 A1).

Claim 1:

Bala discloses a machine-readable medium and *a method for generating one or more computer-executable procedures* (e.g., FIG. 4, page 5, [0056-0058]), *comprising the steps of:*

recording at least one trace of at least one instance of a procedure (e.g., page 2, [0031]; FIG. 6, blocks 630-650-680, page 6, [0074-0079]),

wherein the at least one trace comprises a plurality of steps (e.g., FIG. 4, [0056-0058], blocks 410, 458, and 464);

simultaneously performing an alignment and generalization of the plurality of steps (e.g., page 1, [0013]; page 2, [0023-0024]; FIG. 5E-5F, [0067-0069]),

wherein the alignment identifies and aligns steps that are equivalent once generalized (e.g., FIG. 5A-5J, [0059-0073]); *and*

generating the one or more computer-executable procedures consistent with the alignment and generalization (e.g., page 2, [0029]; page 5, [0058]).

Claim 2:

The rejection of claim 1 is incorporated. Bala also discloses *simultaneously performing an alignment and generalization of the at least one trace further comprises the steps of: computing all possible alignments and generalizations of the at least one trace; and selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes an alignment-generalization functional* (e.g., FIG. 3, GUI Automation 340, Dialog 320, Module 1-N, page 4 [0053-0055]).

Claim 3:

The rejection of claim 2 is incorporated. Bala also discloses *selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes the alignment-generalization functional comprises selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes an alignment functional and a generalization functional* (e.g., FIG. 2, Task Database 220, Task Prediction Module 21, page 4, [0050-0052]).

Claim 4:

The rejection of claim 3 is incorporated. Bala also discloses *selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes the alignment functional and the generalization functional comprises selecting the alignment and the 2 generalization from the all possible alignments and generalizations that maximizes the alignment functional equal to a sum of steps correctly predicted by a procedure model* (e.g., FIG. 5A-J, integration of multiple subtasks to form a corresponding task, page 5, [0059-0073]).

Claim 5:

The rejection of claim 3 is incorporated. Bala also discloses *selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes the alignment functional and the generalization functional comprises selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes the generalization functional that is equal to a sum of steps correctly generalized by a procedure model* (e.g., FIG. 3, page 4, [0053-0055]).

Claim 6:

The rejection of claim 2 is incorporated. Bala also discloses *selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes the alignment-generalization functional comprises selecting the alignment and the generalization from the all possible alignments and generalizations*

that maximizes a monotonically increasing function of an alignment functional and a generalization functional (e.g., FIG. 2, page 4, [0050-0052]).

Claim 7:

The rejection of claim 6 is incorporated. Bala also discloses *selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes a monotonically increasing function of the alignment functional and the generalization functional comprises selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes a linearly increasing function of the alignment functional and the generalization functional* (e.g., FIG. 5A-J, page 5, [0059-0073]).

Claim 8:

The rejection of claim 1 is incorporated. Bala also discloses *simultaneously performing an alignment and generalization of the at least one trace further comprises selecting an alignment and generalization by maximizing an alignment-generalization functional using an optimization technique* (e.g., page 1, [0013]; page 2, [0023-0024]).

Claim 9:

The rejection of claim 8 is incorporated. Bala also discloses *selecting an alignment and generalization by maximizing an alignment-generalization functional using an optimization technique comprises selecting an alignment by maximizing the alignment-generalization functional using an iterative optimization technique* (e.g., page 2, [0031]; page 6, [0074-0079]).

Claim 10:

The rejection of claim 9 is incorporated. Bala also discloses *selecting an alignment by maximizing the alignment-generalization functional using an iterative optimization technique comprises selecting an alignment by maximizing the alignment-*

generalization functional using a gradient-descent technique (e.g., page 4, [0053-0055]; page 5, [0056-0058]).

Claim 11:

The rejection of claim 1 is incorporated. Bala also discloses *simultaneously performing an alignment and generalization of the at least one trace further comprises the steps of: computing an initial alignment and generalization of the at least one trace; generating a procedure model of the initial alignment; and computing a best alignment and generalization of the procedure model* (e.g., page 6, [0074-0079]; page 2, [0029]).

Claim 12:

The rejection of claim 11 is incorporated. Bala also discloses *repeating the steps of determining the initial alignment, generating the procedure model, and determining the best alignment until a local optimum is detected* (e.g., page 5, [0058]; page 4, [0053-0055]).

Claim 15:

The rejection of claim 1 is incorporated. Bala also discloses *simultaneously performing an alignment and generalization of the at least one trace further comprises the steps of: determining an initial alignment and generalization of the at least one trace; generating a transition model and an action model of the initial alignment and generalization; and determining a best alignment of the transition model and the action model* (e.g., page 1, [0013]; page 2, [0023-0024]).

Claim 16:

The rejection of claim 15 is incorporated. Bala also discloses *repeating the steps of determining the initial alignment, generating the transition model and the action model, and determining the best alignment until a convergence is detected* (e.g., page 2, [0031]; page 6, [0074-0079]).

Claim 17:

The rejection of claim 15 is incorporated. Bala also discloses *generating a transition model and an action model of the initial alignment and generalization comprises generating a transition model for at least one node and an action model for the at least one node* (e.g., page 4, [0053-0055]; page 5, [0056-0058]).

Claim 18:

Claim 18 recites the same limitations as those of claim 1, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the reference teaches all of the limitations of the above claim, it also teaches all of the limitations of claim 18.

Claim 20:

Bala also discloses *a method for generating one or more computer-executable procedures, comprising the steps of:*

recording a state of a computer system (e.g., page 2, [0027], [0031]);

recording at least one trace of user actions that change the state of the computer system (e.g., page 2, [0029]; FIG. 6, blocks 630-650-680, page 6, [0074-0079]);

performing an alignment of a plurality of user actions of the at least one trace to at least a second trace to determine a plurality of aligned user actions; performing a generalization of the plurality of aligned user actions to determine a plurality of generalized and aligned user actions (e.g., page 1, [0013]; page 2, [0023-0024]; page 1, [0001]),

wherein the alignment identifies and aligns steps that are equivalent once generalized (e.g., FIG. 5A-5J, [0059-0073]);

selecting a generalized and aligned user action using an alignment-generalization functional to represent a respective user action of the at least one trace (e.g., FIG. 2, Task Database 220, page 4, [0050-0052]; FIG. 6, atomic steps of a specific task, page 6, [0074-0079]); *and*

*generating the one or more computer-executable procedures executable
by the computer system consistent with a selected generalized and aligned user action*
(e.g., page 2, [0029]; page 5, [0058]; page 2, [0023-0024])*.*

Claim Rejections – 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bala in view of Horvitz '452 (art of record, US Patent No. 6,,9,452).

Claim 13:

The rejection of claim 11 is incorporated. Bala does not explicitly disclose *generating a procedure model of the initial alignment comprises generating a Hidden Markov Model of the initial alignment.*

However, in an analogous art, Horvitz '452 further discloses *generating a procedure model of the initial alignment comprises generating a Hidden Markov Model of the initial alignment* (e.g., col.21: 47 – col.22: 27).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Horvitz '452 into that of Bala. One would have been motivated to do so to efficiently determine probability of state transitions and successive atomic steps in a specific task as suggested by Horvitz '452 (e.g., col.22: 7-58).

Claim 14:

The rejection of claim 13 is incorporated. Bala does not explicitly disclose *generating a Hidden Markov Model of the initial alignment comprises generating an Input/Output Hidden Markov Model of the initial alignment.*

However, in an analogous art, Horvitz '452 further discloses *generating a Hidden Markov Model of the initial alignment comprises generating an Input/Output Hidden Markov Model of the initial alignment* (e.g., col.21: 47 – col.22: 27).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the teaching of Horvitz '452 into that of Bala. One would have been motivated to do so to as set forth above.

11. Claims 1, 18, and 20 are rejected under 35 U.S.C. 103(a) as being anticipated by Horvitz '403 (art of record, US Patent No. 6,021,403) in view of Admitted Prior Art (art made of record, hereinafter "APA").

Claim 1:

Horvitz '403 discloses *a method for generating one or more computer-executable procedures, comprising the steps of:*

recording at least one trace of at least one instance of a procedure (e.g., FIG. 2, blocks 50-52, col.7: 17-67),

wherein the at least one trace comprises a plurality of steps (e.g., FIG. 4, [0056-0058], blocks 410, 458, and 464);

performing an alignment and generalization of the plurality of steps (e.g., FIG. 2, blocks 54-62, col.8: 29 – col.9: 13, col.10: 16-49; FIG. 7, col.12: 51 – col.13: 22); *and*

generating the one or more computer-executable procedures consistent with the alignment and generalization (e.g., FIG. 2, blocks 62-66, col.10: 50-58; FIG. 8, col.14: 44 – col.15: 31).

Horvitz '403 discloses predicting specific assistance as:

"...apply probabilistic reasoning to sense that the user may need assistance in using a particular feature or to accomplish a specific task" (col.3: 49-56); and

"A key task required in building the Bayesian network model for the intelligent assistance facility is defining the evidence variables that will be observed, and noting probabilistic relationships of these variables to variables representing hypotheses of interest" (col.8: 29-42).

Horvitz does not explicitly disclose *simultaneously performing an alignment and generalization of the plurality of steps, wherein the alignment identifies and aligns steps that are equivalent once generalized.*

However, APA further discloses *simultaneously performing an alignment and generalization of the plurality of steps, wherein the alignment identifies and aligns steps that are equivalent once generalized* (e.g., page 12, lines 6-10,

> "<u>Known methods for simultaneous alignment and generalization</u> are performed by considering all possible alignments and selecting the alignment where generalization <u>provides the most predictive executable procedure model</u>, as determined, for example, with any of a variety of well-known methods for evaluating the predictive capabilities of a procedure model ...", emphasis added).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine APA's teaching into Horvitz 403's teaching. One would have been motivated to do so to apply probabilistic reasoning and provide assistance facility with highest probability of relevance as suggested by Horvitz '403 (e.g., col.6: 9-18; col.8: 29-42; col.29: 31-57) as well as provide the most predictive executable procedure model as suggested by APA (e.g., page 12, lines 6-10).

Claim 18:

Claim 18 recites the same limitations as those of claim 1, wherein all claimed limitations have been addressed and/or set forth above. Therefore, as the reference

teaches all of the limitations of the above claim, it also teaches all of the limitations of claim 18.

Claim 20:

Horvitz '403 discloses *a method for generating one or more computer-executable procedures, comprising the steps of:*

recording a state of a computer system (e.g., col.3: 24-56; FIG. 32, col.29: 31-57);

recording at least one trace of user actions that change the state of the computer system (e.g., FIG. 2, blocks 50-52, col.7: 17-67);

performing an alignment of a plurality of user actions of the at least one trace to at least a second trace to determine a plurality of aligned user actions; performing a generalization of the plurality of aligned user actions to determine a plurality of generalized and aligned user actions (e.g., FIG. 2, blocks 54-62, col.8: 29 – col.9: 13, col.10; 16-49; FIG. 7, col.12; 51 – col.13: 22);

selecting a generalized and aligned user action using an alignment-generalization functional to represent a respective user action of the at least one trace; and generating the one or more computer-executable procedures executable by the computer system consistent with a selected generalized and aligned user action (e.g., FIG. 2, blocks 62-66, col.10: 50-58; FIG. 8, col.14: 44 – col.15: 31).

Horvitz '403 discloses predicting specific assistance as:

"…apply probabilistic reasoning to sense that the user may need assistance in using a particular feature or to accomplish a specific task" (col.3: 49-56); and

"A key task required in building the Bayesian network model for the intelligent assistance facility is defining the evidence variables that will be observed, and noting probabilistic relationships of these variables to variables representing hypotheses of interest" (col.8: 29-42).

Horvitz does not explicitly disclose *the alignment identifies and aligns steps that are equivalent once generalized.*

However, APA further discloses *the alignment identifies and aligns steps that are equivalent once generalized* (e.g., page 12, lines 6-10,

> "Known methods for simultaneous alignment and generalization are performed by considering all possible alignments and selecting the alignment where generalization provides the most predictive executable procedure model, as determined, for example, with any of a variety of well-known methods for evaluating the predictive capabilities of a procedure model ...", emphasis added).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine APA's teaching into Horvitz 403's teaching. One would have been motivated to do so to apply probabilistic reasoning and provide assistance facility with highest probability of relevance as suggested by Horvitz '403 (e.g., col.6: 9-18; col.8: 29-42; col.29: 31-57) as well as provide the most predictive executable procedure model as suggested by APA (e.g., page 12, lines 6-10).

Conclusion

12. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication should be directed to examiner Thuy Dao (Twee), whose telephone is (571) 272 8570. The examiner can normally be reached on every Tuesday, Thursday, and Friday from 6:00AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam, can be reached at (571) 272 3695.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is (571) 272 2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T. Dao

TUAN DAM
SUPERVISORY PATENT EXAMINER